CHBE 443 – Chemical Engineering Laboratory II
Fall 2020

Overview

This course reinforces fundamental principles taught in prerequisite courses through hands-on experience in the design and execution of experiments with emphasis on process scaling, instrumentation, experimental design, technical writing and communication. We will also discuss engineering ethics in the lecture component of this course.

Lab Section Virtual/At home
Lecture F (as per schedule Table 1) 4:00-5:20 pm Online Zoom through Canvas

Instructors

Mr. Jacob Arredondo, Room 109 Keck Hall, jha1@rice.edu
Dr. Marya Cokar, Room AEL-B226, marya.cokar@rice.edu

Teaching Assistants

Ms. Thao Vy Nguyen, tvn3@rice.edu
Mr. Juan Donoso, jad15@rice.edu

Program Objectives and Student Outcomes

This course will cover the following student outcomes
SO 4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
SO 6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Schedule and Course Format

There will be 4 experimental modules. Two modules (heat exchanger and kinetics) will be sent to you in laboratory kits you can complete in the safety of your own homes. The other two experiments process control and asphaltene characterization will be virtual. The experiments can be done asynchronously. There will be several quizzes, which will be completed on Canvas asynchronously. There will be lectures, which will be attended synchronously via zoom through Canvas.

Table 1: Course Schedule Important Dates

Date	CHBE 443 Schedule
8/28/2020	Live Zoom Lecture 1
9/04/2020	Quiz 1 Canvas
9/11/2020	Live Zoom Lecture 2

9/18/2020	Quiz 2 Canvas
9/25/2020	Live Zoom Lecture 3
10/02/2020	Quiz 3 Canvas
10/09/2020	Live Zoom Lecture 4/Asphaltene Experiment Proposal Due
10/16/2020	Asphaltene Experiment Due
10/23/2020	Live Zoom Lecture 5/Kinetics Experiment Proposal Due
10/30/2020	Kinetics Experiment Due
11/06/2020	Live Zoom Lecture 6/Heat Exchanger Experiment Proposal Due
11/13/2020	Heat Exchanger Experiment Due
11/20/2020	Live Zoom Lecture 7/Process Dynamics and Control Proposal Due
12/04/2020	Process Dynamics and Control Experiment Due

Experiment 1: Asphaltene Characterization (virtual)
Experiment 2: Kinetics (mailed lab kit)
Experiment 3: Heat Exchanger (mailed lab kit)
Experiment 4: Process Dynamics and Control (virtual)

Academic Integrity

Students are required to review and abide by the *Rice Honor Code*, which can be found at honor.rice.edu.Links to an external site. It is the instructor's understanding and expectation that the student's signature on any test or assignment means that the student contributed to the assignment individually or as a team member and that he or she neither gave nor received unauthorized aid. All laboratory reports are treated the

same as pledged exams. You may not consult with members of other teams in any way about your reports. You may not receive help from anyone outside of your team with the exception of the instructor and the TA's. You may not consult lab reports from previous CHBE lab courses. Failure to comply with this policy will be immediately reported to the Honor Council for further actions. This policy will be strictly enforced.

Safety Regulations (no in-lab sessions this year)

You must wear the following Personal Protective Equipment (PPE) at all times while in the lab (**no exceptions**)

- Safety glasses/goggles
- Long sleeve laboratory coat
- Clothing that fully covers yourself to the ankle (pants are best)
- Closed-toe shoes with backs (full coverage shoes are best, high heels are prohibited)

Based on the experiment or procedure, additional PPE such as gloves may be required. Laboratory gloves should only be worn inside the laboratory.

Students will not be allowed to work the lab if they fail to meet these safety regulations

Furthermore, the instructor or lab assistant must always be physically present for you to work in the lab. Students will not be allowed to work in the lab if they fail to meet these safety regulations.

Attendance

Attendance to live zoom lectures is mandatory and lateness is not acceptable.
Missing a class session will be counted as an absence, the only exception is a previous commitment with a Rice sports team. If this is the case, the student should bring a note signed by the coach, specifying the date and time of the game. If any extenuating circumstances prevent your attendance, you are expected to notify the instructor by email in advance. If you do not receive a return email confirming the agreement, you must contact the instructor by other means. Those excused from class are still responsible for all lecture materials.
Each unexcused absence will result in a loss of five (5) percent of the total course grade. Three or more unexcused absences will lead to a failing grade in the course.

Reports and Quizzes

Report due date schedule is shown in Table 1. They must be submitted online in Canvas by 6:00pm on their due date. **Reports will not be accepted if they are turned in at a different day/time or by email**. Any regrading request must be done within one week after the report was returned. In this case, no specific sections but the full report will be regraded. All regrade requests must be made in writing.
Quizzes must be completed by 6:00pm on the dates shown in Table 1. You may not have an extension. The quizzes are closed book and closed notes.

Textbook

No textbook is required, but all texts from prior chemical engineering coursework will be useful for reference of technical materials.

Recommended Reading:

- Michael Alley,*The Craft of Scientific Writing, Springer* (1996) 3rd Edition ISBN- 0-387-94766-3
- Michael Alley,*The Craft of Scietific Presentations* (2013) 2nd Edition ISBN- 978-1-4419-8278-0
- Gregory S. Patience, *Experimental Methods & Instrumentation for Chemical Engineers*, 1st Edition, El Sevier (2013), ISBN-13: 978- 0444538048
- Lucile Vaughan Payne, *The Lively Art of Writing*, Signet (1969), ISBN-13: 978-0451627124
- Jack P. Holman, *Experimental Methods for Engineers,*Seventh Edition, McGraw-Hill (2000)
- Howard M. Kanare, *Writing the Laboratory Notebook,*American Chemical Society (1985)

Coursework and Grading

Lecture Quizzes 15%
Lab Proposals 10%
Participation 10%
Experiment Quizzes 10%
Lab Reports 55%

Canvas

Please familiarize yourself with Canvas. All lab reports will be submitted through Canvas, Quizzes will be taken on Canvas, and laboratory modules will be posted on Canvas. There will be several videos to watch prior to completing your lab report and these will be available in Canvas.

Information Contained in this Syllabus

The information contained in this course syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with Dr. Cokar during the first two weeks of class. All discussions will remain as confidential as possible. Students with disabilities will need to also contact Disability Support Services (x5841) in the Allen Center

Course Summary:

Date	Details	
Fri Aug 28, 2020	Calendar Event CHBE 443 001 F20	4p
Fri Sep 4, 2020	Assignment Team Leadership Forms	du
	Assignment Process Dynamics and Control Quiz	
	Assignment Asphaltene Proposal	
	Assignment Asphaltene Quiz	
	Assignment Heat Exchanger Proposal	
	Assignment Kinetics Proposal	
	Assignment Kinetics Quiz	
	Assignment Lecture Quiz 1: Safety	
	Assignment Process Dyncamics and Control Proposal	